

researches has found that these two phenomena are alike in showing an ascensional radial velocity.

The importance of these researches is obvious, and the results likely to accrue from the simultaneous study of the forms and velocities of the various features most valuable, but, as M. Deslandres points out, it will only be possible to state general and definite laws when continuous and complete observations have extended over at least one undecennial period of solar activity.

THE SIGNIFICANCE OF LIFE TO THE OMAHA.¹

FOR twenty-nine years Miss Alice Fletcher has been studying the Omaha, and her monograph of the tribe is now published in the twenty-seventh Annual Report of the Bureau of American Ethnology. Her collaborator for most of this time was Mr. Francis La Flesche (the son of Joseph La Flesche, former principal chief of the tribe), who in his boyhood witnessed some of the ceremonies described in the memoir, which were later explained to him by his father and by the old men who were the keepers of these ancient rites and rituals. When Miss Fletcher first went to live among the Omaha, the tribe had recently been forced to abandon hunting owing to the sudden extinction of the herds of bison. All the men and women had participated in the old life, many of the ancient customs were practised, and much of the aboriginal life still lingered. The environment was changing quickly; all that they formerly had relied on as stable had been swept away; the bison, which they had been taught was given them as an inexhaustible food supply, had been destroyed by agencies new and strange; even the wild grasses that had covered the prairies were changing. Great unrest and anxiety had come to the people through the Government's dealings with their kindred, the Ponca tribe, and fear haunted every Omaha fireside lest they, too, be driven from their homes and the graves of their fathers. The future was a dread to old and young. Thanks to the strenuous efforts of Miss Fletcher on their behalf, a law was enacted in 1882 granting lands in severalty, and prospective citizenship. In 1802 the Omaha were reduced to about 300 by smallpox; twenty-seven years later they were said to number 1900; in 1906 the population of the tribe was 1228. The past is overlaid by a thriving present. The old Omaha men and women sleep peacefully in the hills while their grandchildren farm beside their white neighbours, send their children to school, speak English, and keep bank accounts.

"In the account here offered," Miss Fletcher says, "nothing has been borrowed from other observers; only original material gathered directly from the native people has been used, and the writer has striven to make, so far as possible, the Omaha his own interpreter." The most important previous accounts of the tribe are the Rev. J. Owen Dorsey's "Omaha Sociology," published in the third Annual Report of the Bureau in 1884, which ever since has been largely quoted, and his paper on "Omaha Dwellings, Furniture and Implements" (the thirteenth Report, 1896). It will be found that there are many discrepancies between Dorsey's and Miss Fletcher's statements. For example, Dorsey says that the Black Shoulder clan were originally bisons ("buffaloes") and dwelt under the surface of the water, but Miss Fletcher writes, "no Omaha believes that his ancestors ever were elk, or buffalo, or deer, or turtle, any more than

that they were the wind, the thunder, or the sky" (p. 601).

As has just been stated, Miss Fletcher gives us only first-hand matter, which she has carefully sifted and verified so far as possible. She evidently did not like to criticise or correct Dorsey's statements; there can, however, be little hesitation by students which account they should follow when discrepancies occur. On account of the great changes that have taken place in the material, social, and religious life of the Omaha it is improbable that anything of importance can be gleaned by future workers, and much that Miss Fletcher describes will then be unobtainable. Her monograph, the result of arduous and protracted toil, is the record by a field worker of wide sympathy and insight of investigations which were begun at the critical time of incipient disintegration and while the old knowledge was still fresh in the minds of the people. Some American ethnologists even go so far as to say that she reads into the native mind ideas that it does not contain, but the more we learn about the North American Indian the more apparent it is that he is imbued with a rare spirituality, and it is a common experience that one field observer will discern what another cannot see, as an old writer has said, "The natural man receiveth not the things of the Spirit of God: for they are foolishness unto him: neither can he know them, because they are spiritually discerned." Doubtless Miss Fletcher is content to leave this matter to the arbitration of the intensive study of the religion of allied tribes.

The legendary home of the Omaha and cognate tribes was in the east, "near a great body of water," and the legend gives an interesting account of cultural evolution, due partly to invention and partly to borrowing from other tribes. All children passed through a ceremony of turning, which was directly related to the wind, earth, and fire, whereby it was introduced to the tribe. Later a lock of the boy's hair was cut off and given to Thunder; thereby the life of the child was given into the keeping of the god that controlled the life and death of the warrior. The next stage in the life of an Omaha youth was marked by the rite introducing him to individual life and to the supernatural. Four days and nights the youth was to fast and pray, then in a trance he saw an object which was his personal connection with the universe, by which he could strengthen his spirit and his physical powers. There were societies the membership of which was made up of men who had had visions of the same object. The sequence of rites began at birth, with the announcement to all created things that a new life had come into their midst; when the child had acquired ability to move about of its own volition, its feet were set in the path of life, and it entered into membership of the tribe; the entrance into manhood required voluntary effort, and by prayer and fasting the man came into direct and personal relations with the supernatural.

Miss Fletcher states that "the tribal organisation was based on certain fundamental religious ideas, cosmic in significance." The real division of the tribe was based on the dual division in nature; each contained several "gentes," which in their turn were divided into "subgentes. . . . The Omaha gens was a group of exogamous kindred who practised a particular rite, the child's birthright to which descended solely through the father; and the symbol characteristic of that rite became the symbol, crest, or 'totem' of the gens." A noticeable feature in the book is the large number of prayers and songs, which are given in the native language, with a literal and free translation, and with the musical notation. A considerable space is given to an account of the social and secret societies; the

¹ Twenty-seventh Annual Report of the Bureau of American Ethnology to the Secretary of the Smithsonian Institution, 1905-6. Pp. 672. (Washington: Government Printing Office, 1911.)

latter dealt with mysteries, and membership was generally attained by virtue of a dream vision. The Omaha were a thoughtful and practical people. The idea of personality is dominant in the language and in the religious beliefs and practices. The force within this personality was recognised as that of the will, and "the Sacred Legend, which preserved the experiences of the years, emphasised the vital fact that better conditions are always attained by the exercise of thought, not by magical interferences." Enough has been said to show that Miss Fletcher has given us a monograph that deserves the careful study of all ethnologists, and will still further increase their indebtedness to the Bureau of American Ethnology.

A. C. HADDON.

THE ROYAL MICROSCOPICAL SOCIETY.

ON Wednesday, October 16, a conversazione was held in the Great Hall of King's College, about four hundred fellows and guests being received by the president, Mr. H. G. Plimmer, F.R.S., and Mrs. Plimmer. The object in view was, so far as practicable, to gather together a series of exhibits which would indicate the many uses, both in science and commerce, to which the microscope is put at the present time. In addition, the conversazione afforded an opportunity for those engaged in microscopic work to show objects of interest or to demonstrate the use of apparatus or appliances for special purposes.

The centre of the hall was occupied with pond life exhibits, about forty microscopes having been arranged on the tables under the direction of D. J. Scourfield, and these were a centre of interest to a considerable number of observers throughout the evening. Other interesting exhibits were some very beautiful botanical slides showing mitosis, by H. F. Angus and E. J. Sheppard; a Siedentopf ultra-microscope and cardiod condenser system for the observation of ultra-microscopic particles, by J. E. Barnard; an Abbe diffraction microscope illuminated by means of a quartz mercury-vapour lamp, by J. E. Barnard and Powell Swift; an instantaneous reflex photomicrographic camera, by F. W. Watson Baker; some preparations exhibiting Brownian movement, by G. P. Bate; a complete optical bench and an apparatus for polishing metal surfaces, by Conrad Beck; an extensive series of saccharomycetes, by A. Chaston Chapman; a very interesting old microscope and accessory apparatus, by Prof. A. Dendy, F.R.S.; some diffraction experiments, by J. W. Gordon; a series of foraminifera, by E. Heron-Allen and A. Earland; microchemical reactions of a very striking character, by Prof. Herbert Jackson; an extremely beautiful series of photomicrographs in colour, by J. W. Ogilvy, and another series of stereophotomicrographs of water mites, also in colour, by H. Taverner. The possibility of applying his microspectra camera to the production of photomicrographs in colour was demonstrated by J. Rheinberg, and this exhibit attracted a great deal of attention.

Prof. Minchin, F.R.S., exhibited a series of trypanosomes which were of great interest. In the adjoining theatre, three lectures were delivered during the evening, Dr. E. J. Spitta giving a kinematographic exhibition of pond life, Prof. Hewlett lecturing on insects as carriers of disease, and Mr. Max Poser showing a beautiful series of liquid crystals by means of a projection micropolariscope, each of the lectures attracting a large audience. Apart from the social advantages of such a gathering, the exhibits were in all cases of real scientific interest, and demonstrated that the Royal Microscopical Society may look forward to doing an even greater work in the future than it has done in the past in bringing before scientific

workers the possibilities of the use of the microscope. That the instrument is now a necessity in nearly all branches of science is, of course, well known, but it is often used merely as a tool and not as an appliance which demands considerable skill in its use for the best results to be obtained. If the council of the society should decide that this conversazione is to be but the first of a series of annual gatherings to be held with a similar object, then the success which has attended this function may be regarded as an indication that its usefulness in the future may be considerably increased.

THE BRITISH ASSOCIATION AT DUNDEE. SECTION M.

AGRICULTURE.

FROM THE OPENING ADDRESS BY T. H. MIDDLETON,
M.A., PRESIDENT OF THE SECTION.

INTEREST in the practice of improved husbandry was first aroused in England by the books of Fitzherbert. The extent to which this author stimulated agriculture may be inferred from the appreciation with which his works were received in his own day, and copied by others for a century. He himself does not appear to have been acquainted with the classical writers. He describes the English practice with which he was familiar; he quotes frequently from the Scriptures and refers to early religious works, but only in writing of animal diseases, when he cites the "Sayinge of the Frenche man," is there any indication that he was influenced by foreign authors. Fitzherbert's "Boke of Husbandry" and "Surueyenge," while they are free from the direct influence of Roman writers, show us, nevertheless, that the English agriculture of his day owed much to Roman traditions. The careful business methods and accounting of the farm bailiffs of the Middle Ages, with which Thorold Rogers has acquainted us, were the methods which Fitzherbert learned and counselled, as they were the methods which Columella taught.

It was between 1523, when Fitzherbert's "Boke of Husbandry" was first printed, and 1557, when Tusser published his "Points of Good Husbandry," that the classical writers began to exert a direct influence on English farming. In 1532 there appeared Xenophon's "Treatise of Householde," "ryht counnyngly translated out of the Greke tonge into Englyshe by Gentian Hervet," which at once became popular and ran through a number of editions. At least as early as 1542 editions of the works on agriculture and gardening of Cato, Varro, Columella, and Palladius¹ were published in England, and they must certainly have been known to Tusser, for in his "Five Hundred Points of Good Husbandry," composed some years later, there is clear evidence of the influence of the writings of Xenophon and Columella. From the latter author Tusser adopts the method of a calendar, and he appears now and again to adapt Roman maxims to modern conditions. Thus in his calendar Columella says of March that it "is the proper time to cleanse meadows, and to defend and secure them from cattle; in warm and dry places indeed that ought to be done even from the month of January," and Tusser in his calendar for March rhymes:—

"Spare meadow at Gregorie Marshes at Pask
for feare of drie Sommer no longer time ask
Then hedge them and ditch them, bestow thereon pence,
corne, meadow, and pasture aske alway good fence."

It might be, of course, that in discussing the same subject, a subject moreover which does not admit of much difference of opinion, the similarity of the above—

¹ A translation of Palladius into English was made about 1420, but it was not discovered and published until within recent times.